[72 FR 14442, Mar. 28, 2007]

APPENDIX R TO SUBPART G OF PART 82—SUBSTITUTES SUBJECT TO USE RESTRICTIONS LISTED IN THE DECEMBER 20, 2011 FINAL RULE, EFFECTIVE FEBRUARY 21, 2012

SOURCE: 76 FR 78855, Dec. 20, 2011, unless otherwise noted.

SUBSTITUTES THAT ARE ACCEPTABLE SUBJECT TO USE CONDITIONS

End-use	Substitute	Decision	Use conditions	Further information
Household refrigerators, freezers, and combination refrigerators and freezers. (New equipment only)	Isobutane (R–600a) as a substitute for CFC–12 and HCFC–22. R–441A as a substitute for CFC–12 and HCFC–22	Acceptable Subject To Use Conditions.	These refrigerants may be used only in new equipment designed specifically and clearly identified for the refrigerant (*i.e.,* none of these substitutes may be used as a conversion or ''retrofit'' refrigerant for existing equipment designed for a different refrigerant) These refrigerants may be used only in a refrigerator or freezer, or combination refrigerator and freezer, that meets all requirements listed in Supplement SA to the 10th edition of the Underwriters Laboratories (UL) Standard for Household Refrigerators and Freezers, UL 250, dated 1993 updated August 2000. In cases where the final rule includes requirements more stringent than those of the 10th edition of UL 250, the appliance must meet the requirements of the final rule in place of the requirements in the UL Standard The quantity of the substitute refrigerant (*i.e.,* ''charge size'') shall not exceed 57 grams (2.0 ounces) in any refrigerator, freezer, or combination refrigerator and freezer for each circuit	Applicable OSHA requirements at 29 CFR part 1910 must be followed, including those at 29 CFR 1910.106 (flammable and combustible liquids), 1910.110 (storage and handling of liquefied petroleum gases), 1910.157 (portable fire extinguishers), and 1910.1000 (toxic and hazardous substances). Proper ventilation should be maintained at all times during the manufacture and storage of equipment containing hydrocarbon refrigerants through adherence to good manufacturing practices as per 29 CFR 1910.106. If refrigerant levels in the air surrounding the equipment rise above one-fourth of the lower flammability limit, the space should be evacuated and re-entry should occur only after the space has been properly ventilated. Technicians and equipment manufacturers should wear appropriate personal protective equipment, including chemical goggles and protective gloves, when handling isobutane and R–441A. Special care should be taken to avoid contact with the skin since these refrigerants, like many refrigerants, can cause freeze burns on the skin.

SUBSTITUTES THAT ARE ACCEPTABLE SUBJECT TO USE CONDITIONS—Continued

End-use	Substitute	Decision	Use conditions	Further information
				A class B dry powder type fire extinguisher should be kept nearby. Technicians should only use spark-proof tools when working on refrigerators and freezers with isobutane and R–441A. Recovery equipment designed for flammable refrigerants should be used. Only technicians specifically trained in handling flammable refrigerants should service refrigerators and freezers containing these refrigerants. Technicians should gain an understanding of minimizing the risk of fire and the steps to use flammable refrigerants safely.
Household refrigerators, freezers, and combination refrigerators and freezers. (New equipment only)	Isobutane (R–600a) as a substitute for CFC–12 and HCFC–22. R–441A as a substitute for CFC–12 and HCFC–22	Acceptable Subject To Use Conditions.	As provided in clauses SA6.1.1 and SA6.1.2 of UL Standard 250, the following markings shall be attached at the locations provided and shall be permanent: (a) On or near any evaporators that can be contacted by the consumer: ''DANGER-Risk of Fire or Explosion. Flammable Refrigerant Used. Do Not Use Mechanical Devices To Defrost Refrigerator. Do Not Puncture Refrigerant Tubing.'' (b) Near the machine compartment: ''DANGER-Risk of Fire or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.'' (c) Near the machine compartment: ''CAUTION—Risk of Fire or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Service This Product. All Safety Precautions Must be Followed.''	Room occupants should evacuate the space immediately following the accidental release of this refrigerant. If a service port is added then household refrigerators, freezers, and combination refrigerator and freezers using these refrigerants should have service aperture fittings that differ from fittings used in equipment or containers using non-flammable refrigerant. ''Differ'' means that either the diameter differs by at least 1⁄16 inch or the thread direction is reversed (*i.e.,* right-handed vs. left-handed). These different fittings should be permanently affixed to the unit at the point of service and maintained until the end-of-life of the unit, and should not be accessed with an adaptor.

SUBSTITUTES THAT ARE ACCEPTABLE SUBJECT TO USE CONDITIONS—Continued

End-use	Substitute	Decision	Use conditions	Further information
			(d) On the exterior of the refrigerator: ''CAUTION—Risk of Fire or Explosion. Dispose of Properly In Accordance With Federal Or Local Regulations. Flammable Refrigerant Used.'' (e) Near any and all exposed refrigerant tubing: ''CAUTION—Risk of Fire or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.'' All of these markings shall be in letters no less than 6.4 mm (¼ inch) high. The refrigerator, freezer, or combination refrigerator and freezer must have red, Pantone® Matching System (PMS) #185 marked pipes, hoses, or other devices through which the refrigerant is serviced (typically known as the service port) to indicate the use of a flammable refrigerant. This color must be present at all service ports and where service puncturing or otherwise creating an opening from the refrigerant circuit to the atmosphere might be expected (*e.g.,* process tubes). The color mark must extend at least 2.5 centimeters (1 inch) from the compressor and must be replaced if removed.	

SUBSTITUTES THAT ARE ACCEPTABLE SUBJECT TO USE CONDITIONS—Continued

End-use	Substitute	Decision	Use conditions	Further information
Retail food refrigerators and freezers (stand-alone units only). (New equipment only)	Propane (R–290) as a substitute for CFC–12, HCFC–22, and R–502.	Acceptable subject to use conditions.	These refrigerants may be used only in new equipment specifically designed and clearly identified for the refrigerants (*i.e.,* none of these substitutes may be used as a conversion or ''retrofit'' refrigerant for existing equipment designed for other refrigerants). These substitutes may only be used in equipment that meets all requirements in Supplement SB to the 10th edition of the Underwriters Laboratories (UL) Standard for Commercial Refrigerators and Freezers, UL 471, dated November 2010. In cases where the final rule includes requirements more stringent than those of the 10th edition of UL 471, the appliance must meet the requirements of the final rule in place of the requirements in the UL Standard. The charge size for the retail food refrigerator or freezer shall not exceed 150 grams (5.3 ounces) in each circuit.	Applicable OSHA requirements at 29 CFR part 1910 must be followed, including those at 29 CFR 1910.94 (ventilation) and 1910.106 (flammable and combustible liquids), 1910.110 (storage and handling of liquefied petroleum gases), and 1910.1000 (toxic and hazardous substances). Proper ventilation should be maintained at all times during the manufacture and storage of equipment containing hydrocarbon refrigerants through adherence to good manufacturing practices as per 29 CFR 1910.106. If refrigerant levels in the air surrounding the equipment rise above one-fourth of the lower flammability limit, the space should be evacuated and re-entry should occur only after the space has been properly ventilated. Technicians and equipment manufacturers should wear appropriate personal protective equipment, including chemical goggles and protective gloves, when handling propane. Special care should be taken to avoid contact with the skin since propane, like many refrigerants, can cause freeze burns on the skin. A class B dry powder type fire extinguisher should be kept nearby. Technicians should only use spark-proof tools when working on refrigerators and freezers with propane. Recovery equipment designed for flammable refrigerants should be used.

SUBSTITUTES THAT ARE ACCEPTABLE SUBJECT TO USE CONDITIONS—Continued

End-use	Substitute	Decision	Use conditions	Further information
				Only technicians specifically trained in handling flammable refrigerants should service refrigerators and freezers containing these refrigerants. Technicians should gain an understanding of minimizing the risk of fire and the steps to use flammable refrigerants safely.
Retail food refrigerators and freezers (stand-alone units only). (New equipment only)	Propane (R–290) as a substitute for CFC–12, HCFC–22, and R–502.	Acceptable subject to use conditions.	As provided in clauses SB6.1.2 to SB6.1.5 of UL Standard 471, the following markings shall be attached at the locations provided and shall be permanent: (a) Attach on or near any evaporators that can be contacted by the consumer: ''DANGER-Risk of Fire or Explosion. Flammable Refrigerant Used. Do Not Use Mechanical Devices To Defrost Refrigerator. Do Not Puncture Refrigerant Tubing.'' (b) Attach near the machine compartment: ''DANGER-Risk of Fire or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.'' (c) Attach near the machine compartment: ''CAUTION—Risk of Fire or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Service This Product. All Safety Precautions Must be Followed.'' (d) Attach on the exterior of the refrigerator: ''CAUTION—Risk of Fire or Explosion. Dispose of Properly In Accordance With Federal Or Local Regulations. Flammable Refrigerant Used.''	Room occupants should evacuate the space immediately following the accidental release of this refrigerant. If a service port is added then household refrigerators, freezers, and combination refrigerator and freezers using these refrigerants should have service aperture fittings that differ from fittings used in equipment or containers using non-flammable refrigerant. ''Differ'' means that either the diameter differs by at least 1⁄16 inch or the thread direction is reversed (*i.e.,* right-handed vs. left-handed). These different fittings should be permanently affixed to the unit at the point of service and maintained until the end-of-life of the unit, and should not be accessed with an adaptor.

SUBSTITUTES THAT ARE ACCEPTABLE SUBJECT TO USE CONDITIONS—Continued

End-use	Substitute	Decision	Use conditions	Further information
			(e) Attach near any and all exposed refrigerant tubing: ''CAUTION—Risk of Fire or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.'' All of these markings shall be in letters no less than 6.4 mm (¼ inch) high. The refrigerator or freezer must have red, Pantone® Matching System (PMS) #185 marked pipes, hoses, and other devices through which the refrigerant is serviced, typically known as the service port, to indicate the use of a flammable refrigerant. This color must be present at all service ports and where service puncturing or otherwise creating an opening from the refrigerant circuit to the atmosphere might be expected (*e.g.,* process tubes). The color mark must extend at least 2.5 centimeters (1 inch) from the compressor and must be replaced if removed.	

Note: In accordance with the limitations provided in section 310(a) of the Clean Air Act (42 U.S.C. 7610(a)), nothing in this table shall affect the Occupational Safety and Health Administrations' authority to promulgate and enforce standards and other requirements under the Occupational Safety and Health Act of 1970 (29 U.S.C. 651 *et seq.*).

Note: The use conditions in this appendix contain references to certain standards from Underwriters Laboratories Inc. (UL). The standards are incorporated by reference, and the referenced sections are made part of the regulations in part 82:

1. UL 250: Household Refrigerators and Freezers. 10th edition. Supplement SA: Requirements for Refrigerators and Freezers Employing a Flammable Refrigerant in the Refrigerating System. Underwriters Laboratories, Inc. August 25, 2000.

2. UL 471. Commercial Refrigerators and Freezers. 10th edition. Supplement SB: Requirements for Refrigerators and Freezers Employing a Flammable Refrigerant in the Refrigerating System. Underwriters Laboratories, Inc. November 24, 2010.

The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of UL Standards 250 and 471 may be purchased by mail at: COMM 2000; 151 Eastern Avenue, Bensenville, IL 60106; Email: *orders@comm-2000.com;* Telephone: 1 (888) 853–3503 in the U.S. or Canada (other countries dial +1 (415) 352–2168); Internet address: *http://ulstandardsinfonet.ul.com/* or *www.comm-2000.com.*

You may inspect a copy at U.S. EPA's Air and Radiation Docket; EPA West Building, Room 3334, 1301 Constitution Ave. NW., Washington DC or at the National Archives and Records Administration (NARA). For questions regarding access to these standards, the telephone number of EPA's Air and Radiation Docket is (202) 566–1742. For information on the availability of this material at NARA, call (202) 741–6030, or go to:*http://www.archives.gov/federal__register/code__of__federal__regulations/ibr__locations.html.*